

## **11.0 CONSERVATION RECOMMENDATIONS**

Section 11 discusses NMFS' obligation to develop conservation recommendations under Section 7 (a)(1) of the ESA. Section 7 (a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and listed species. Conservation recommendations are discretionary measures suggested to minimize or avoid the potential adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, to develop additional information, or to assist the Federal agencies in complying with the obligations under section 7(a)(1) of the ESA. NMFS believes that the following conservation recommendations are consistent with these obligations and, therefore, supports their implementation by the Action Agencies.

### **11.1 CREATE SPAWNING HABITAT FOR LCR CHINOOK SALMON IN THE IVES ISLAND AREA BELOW BONNEVILLE DAM**

As described in Section 6, the Action Agencies can augment lower Columbia River flows with upper basin reservoir storage to create spawning habitat for tule chinook salmon in the Ives Island area. That is, starting the flow augmentation program described in Section 9.6.1.2.1 to benefit CR chum salmon approximately 4 weeks earlier will provide LCR fall chinook salmon access to this habitat. However, NMFS is concerned over whether the hydrosystem can sustain this operation during a low or average water year without an adverse effect on the ability to meet flow objectives specified in Section 9.6.1.2.1. NMFS, therefore, recommends that the Action Agencies provide flow augmentation for access to spawning habitat in the Ives Island area as early as the first week in October if the hydroregulation studies completed by the middle of the previous month (September) indicate that the operation will not add significant risk to operations designed to meet spawning and incubation requirements for chum salmon or spring and summer flow objectives for juvenile migrants.

### **11.2 EVALUATE EFFECTS OF FCRPS OPERATIONS ON INFECTIOUS DISEASE TRANSMISSION**

The Corps should evaluate the cumulative effects of delay and temperature on the transmission occurrence and level of infectious diseases.

Adult passage delay has been documented at FCRPS hydro projects, but effects of cumulative delay passing the FCRPS hydro system (including increased exposure to elevated temperatures) have not been adequately addressed.

### **11.3 DEVELOP AN ANESTHETIC THAT WILL MEET FDA REQUIREMENTS**

The Corps should identify and develop an anesthetic appropriate for use on salmonids in mainstem trapping facilities and other locations, and should seek Food and Drug Administration (FDA) and any other necessary approvals for its use.

The anesthetic substance developed must meet a number of criteria, including ease of use (when large numbers of fish must be handled) and low immediate and delayed handling mortality. In addition, any fish released back into the river must be safe for consumption by fishers who may catch those fish subsequent to the trapping.

The trapping and sampling of components of each run of adult salmonids at mainstem locations is a fundamental requirement for monitoring ESU status, run performance, and effectiveness of hydrosystem operations. In addition, the operation of trapping facilities provides an important tool for reducing straying of hatchery fish into natural production areas. The handling of large numbers of fish during trapping operations requires the use of an anesthetic to calm the fish, thereby reducing injuries and mortalities. Anesthetics currently used in the Columbia River basin include MS-222 (tricaine methanesulfonate or ethyl m-aminobenzoate sulphonate), clove oil, and carbon dioxide. Each substance is considered effective for anesthetic use, but each also has drawbacks. For example, carbon dioxide can result in increased injuries due to thrashing of the fish during recovery, particularly as water temperatures increase. MS-222 has not been approved for use in fish which may be subsequently consumed within 21 days of use. Therefore, a critical need exists to evaluate all potential anesthetics and to identify and adopt the most effective substance which can be used, based on minimizing injuries and lasting effects on salmonid survival and eliminating health risks to consumers of harvested fish. It is possible that the anesthetic finally adopted may be one of those already in use, possibly with modifications to existing methods. It is also possible that different substances may be found effective for different objectives or under different conditions.

**11.4 EVALUATE EFFECTS OF SHAD**

The Corps shall evaluate the effects of large numbers of shad in fish ladders on adult salmon migratory behavior, timing, and passage.

Delay and accumulations of shad in fish ladders may contribute to delay of adult salmonids migrating through the FCRPS hydrosystem.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendation.

**11.5 EVALUATE MOVING THE LOWER COLUMBIA RIVER FLOW MEASUREMENT LOCATION**

The Action Agencies, in coordination with NMFS, shall evaluate the hydrologic effects of moving the lower Columbia River flow measurement location from McNary Dam to Bonneville or The Dalles dams by developing new flow objectives for those sites.

The present flow objectives were developed using available fish survival data at various locations in the basin. McNary Dam was selected as a flow measurement location because a) data were available to define a flow objective, b) it is located downstream of the confluence of the Snake and Columbia rivers, and c) little active storage is provided by downstream FCRPS projects. Changing the flow objective to The Dalles or Bonneville dams would include the streamflow depletion effects of BOR's projects located downstream from McNary Dam, as well as other water diversions from the lower Columbia River.